

**Amendments to the Claims:**

This listing of claims will replace all prior versions, and listings, of claims in the application:

**Listing of Claims:**

1. (previously presented) A nickel base superalloy consisting of 3.0 to 12 wt% chromium, up to 3.0 wt% molybdenum, 3.0 to 10 wt% tungsten, less than 5.0 wt% rhenium, 6.0 to 12 wt% tantalum, 4.0 to 7.0 wt% aluminum, up to 15 wt% cobalt, up to 0.05 wt% carbon, up to 0.02 wt% boron, up to 0.1 wt% zirconium, up to 0.8 wt% hafnium, up to 2.0 wt% niobium, up to 1.0 wt% vanadium, up to 0.7 wt% titanium, up to 10 wt% of at least one element selected from the group consisting of ruthenium, rhodium, palladium, osmium, iridium, platinum, and mixtures thereof, and the balance essentially nickel, said nickel base superalloy having a microstructure which is pore free and eutectic  $\gamma$ - $\gamma'$  free.

2. (original) A nickel base superalloy according to claim 1, wherein said microstructure has a gamma prime morphology which includes a bimodal  $\gamma'$  distribution.

3. (previously presented) A nickel base superalloy according to claim 2, wherein said bimodal  $\gamma'$  distribution includes a uniform distribution of large  $\gamma'$  particles in a continuous gamma matrix and a second and uniform distribution of fine  $\gamma'$  particles.

4. (previously presented) A nickel base superalloy consisting of 3.0 to 12 wt% chromium, up to 3.0 wt% molybdenum, 3.0 to 10 wt% tungsten, less than 5.0 wt% rhenium, 6.0 to 12 wt% tantalum, 4.0 to 7.0 wt% aluminum, up to 15 wt% cobalt, up to 0.05 wt% carbon,

up to 0.02 wt% boron, up to 0.1 wt% zirconium, up to 0.8 wt% hafnium, up to 2.0 wt% niobium, up to 1.0 wt% vanadium, up to 0.7 wt% titanium, up to 10 wt% of at least one element selected from the group consisting of ruthenium, rhodium, palladium, osmium, iridium, platinum, and mixtures thereof, and the balance essentially nickel, said nickel base superalloy having a microstructure which is pore free and eutectic  $\gamma$ - $\gamma'$  free, said microstructure having a gamma prime morphology which includes a bimodal  $\gamma'$  distribution, said bimodal  $\gamma'$  distribution including a uniform distribution of large  $\gamma'$  particles in a continuous gamma matrix and a second and uniform distribution of fine  $\gamma'$  particles, said large  $\gamma'$  particles being octet shaped and having an average particle size in the range of  $1.0\mu$  to  $20\mu$  and the fine  $\gamma'$  particles being cuboidal particles and having an average particle size in the range of from  $0.45\mu$  to  $0.55\mu$ .

5. (original) A nickel base superalloy according to claim 1, wherein said nickel base superalloy is a single crystal nickel base superalloy.

6. (previously presented) A single crystal nickel base superalloy having a microstructure which is pore-free and eutectic  $\gamma$  -  $\gamma'$  free and which has a gamma prime morphology which includes a bimodal  $\gamma'$  distribution, the superalloy being capable of resisting initiation and subsequent propagation of fatigue cracks in a hydrogen environment.

7. (original) A single crystal nickel base superalloy according to claim 6, wherein said bimodal  $\gamma'$  distribution includes large  $\gamma'$  particles having a particle size in the range of from  $1.0\mu$  to  $20\mu$  and fine  $\gamma'$  particles.

8. (original) A single crystal nickel base superalloy according to claim 7, wherein said large  $\gamma'$  particles are present in an amount from 25 vol% to 50 vol%.

9. (original) A single crystal nickel base superalloy according to claim 7, wherein said large  $\gamma'$  particles are present in an amount from 27 vol% to 45 vol%.

10. (previously presented) A single crystal nickel base superalloy having a microstructure which is pore-free and eutectic  $\gamma - \gamma'$  free and a gamma prime morphology which includes a bimodal  $\gamma'$  distribution having large  $\gamma'$  particles with a particle size in the range of from  $1.0\mu$  to  $20\mu$  and fine  $\gamma'$  particles, said fine  $\gamma'$  particles having a particle size in the range of from  $0.45\mu$  to  $0.55\mu$ , the superalloy being capable of resisting initiation and subsequent propagation of fatigue cracks in a hydrogen environment.

11. (previously presented) A single crystal nickel base superalloy according to claim 7, wherein said large  $\gamma'$  particles have an octet shape and said fine  $\gamma'$  particles have cuboidal shape.

12 - 23 (cancelled)

24. (previously presented) An object formed from a single crystal nickel base alloy having a microstructure which is pore-free and eutectic  $\gamma - \gamma'$  free, and which has a gamma prime morphology with a bimodal  $\gamma'$  distribution, the alloy being

capable of resisting initiation and subsequent propagation of fatigue cracks in a hydrogen environment.

25. (original) An object according to claim 24, wherein the bimodal  $\gamma'$  distribution includes large  $\gamma'$  particles having an average particle size in the range of from  $1\mu$  to  $20\mu$  and fine  $\gamma'$  particles having an average particle size in the range of from  $0.45\mu$  to  $0.55\mu$ .

26. (original) An object according to claim 24, wherein said nickel base alloy has a composition comprising 3.0 to 12 wt% chromium, up to 3.0 wt% molybdenum, 3.0 to 10 wt% tungsten, up to 5.0 wt% rhenium, 6.0 to 12 wt% tantalum, 4.0 to 7.0 wt% aluminum, up to 15 wt% cobalt, up to 0.05 wt% carbon, up to 0.02 wt% boron, up to 0.1 wt% zirconium, up to 0.8 wt% hafnium, up to 2.0 wt% niobium, up to 1.0 wt% vanadium, up to 0.7 wt% titanium, up to 10 wt% of at least one element selected from the group consisting of ruthenium, rhodium, palladium, osmium, iridium, platinum, and mixtures thereof, and the balance essentially nickel.

27. (new) A nickel base superalloy consisting of 3.0 to 12 wt% chromium, up to 3.0 wt% molybdenum, 3.0 to 10 wt% tungsten, less than 5.0 wt% rhenium, 6.0 to 12 wt% tantalum, 4.0 to 7.0 wt% aluminum, up to 15 wt% cobalt, up to 0.05 wt% carbon, up to 0.02 wt% boron, up to 0.1 wt% zirconium, up to 0.8 wt% hafnium, up to 2.0 wt% niobium, up to 1.0 wt% vanadium, up to 0.7 wt% titanium, up to 10 wt% of at least one element selected from the group consisting of ruthenium, rhodium, palladium, osmium, iridium, platinum, and mixtures thereof, and the balance essentially nickel, said nickel base superalloy having a microstructure

which is pore free and eutectic  $\gamma$ - $\gamma'$  free, and said microstructure having a  $\gamma$  matrix phase and containing means for impeding preferential cracking in the  $\gamma$  matrix phase.

28. (new) The nickel base superalloy of claim 27, wherein said impeding means comprises a uniform distribution of octet shaped  $\gamma'$  particles in the  $\gamma$  matrix phase.